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Job No.: CTCE/BBMP/W.No.18/KRIDL/WMM/AIV/2015-16

22.08.2015

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (East),** KRIDL, Bangalore.
Name of the Work	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
Reference	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	22.08.2015

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	301	
4	Aggregate Impact value = percent fines	22.02	22.42	
	100* (W_2/W_1)%			22.22

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Note:

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Job No.: CTCE/BBMP/W No.18/KRIDL/WMM/S-T/2015-16 22.08.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (East),** KRIDL, Bangalore.
Name of Work	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
Reference	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	22.08.2015

Result : Flakiness Index = **11.86%**

Elongation Index = **13.45%**

Result : Combined Flakiness & Elongation index 25.31%

Comments:

→ Maximum allowable Flakinee & Elongation Index for Wet Mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.18/KRIDL/BM/Bitumen/2015-16 28.08.2015

BITUMEN DETERMINATION OF BITUMINOUS MACADAM MIX

As per IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (East),** KRIDL, Bangalore.
NAME OF THE WORK	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
REFERENCE	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
SAMPLE I/D	Roads in MLA Layout, Ward No. 18.
DATE OF TESTING	28.08.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482	482.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	18	17.50
7. Bitumen content in %	3.60	3.50
8. Average	3.55	

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Job No.: CTCE/BBMP/W.No.18/KRIDL/BM/Gradation/2015-16 28.08.2015

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (East),** KRIDL, Bangalore.
NAME OF THE WORK	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
REFERENCE	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
SAMPLE I/D	Roads in MLA Layout, Ward No. 18.
DATE OF TESTING	28.08.2015

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	22.16	4.60	4.60	95.40	90-100
13.2	96.54	20.03	24.63	75.37	56-88
4.75	216.38	44.89	69.52	30.48	16-36
2.36	84.75	17.58	87.10	12.90	4-19
0.3	31.25	6.48	93.59	6.41	2-10
0.075	12.83	2.66	96.25	3.75	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	25.15	5.21	5.21	94.79	90-100
13.2	87.95	18.23	23.44	76.56	56-88
4.75	214.36	44.43	67.87	32.13	16-36
2.36	75.24	15.59	83.46	16.54	4-19
0.3	37.65	7.80	91.26	8.74	2-10
0.075	13.28	2.75	94.02	5.98	0-8

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Job No.: CTCE/BBMP/W.No.18/KRIDL/SDBC/Bitumen/2015-16 28.08.2015

BITUMEN DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (East),** KRIDL, Bangalore.
NAME OF THE WORK	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
REFERENCE	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
SAMPLE I/D	SWD Parallel Road, Ward No. 18
DATE OF TESTING	28.08.2015

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	475
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25.00	25.00
7. Bitumen content in %	5.00	5.00
8. Average	5.00	

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Job No.: CTCE/BBMP/W.No.18/KRIDL/SDBC/Gradation/2015-16 28.08.2015

GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (East),** KRIDL, Bangalore.
NAME OF THE WORK	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No. 18, BBMP, Bangalore.
REFERENCE	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
SAMPLE I/D	SWD Parallel Road, Ward No. 18
DATE OF TESTING	28.08.2015

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	26.12	5.50	5.50	94.50	90-100
4.75	253.47	53.36	58.86	41.14	35-51
2.36	52.31	11.01	69.87	30.13	24-39
1.18	26.58	5.60	75.47	24.53	15-30
0.3	59.64	12.56	88.03	11.97	9-19
0.075	35.15	7.40	95.43	4.57	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	32.18	6.77	6.77	93.23	90-100
4.75	252.19	53.09	59.87	40.13	35-51
2.36	41.21	8.68	68.54	31.46	24-39
1.18	38.75	8.16	76.70	23.30	15-30
0.3	38.6	8.13	84.83	15.17	9-19
0.075	47.84	10.07	94.90	5.10	3-8

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Job No.: CTCE/BBMP/W.No.18/KRIDL/CSR-08/931d/QB(BM)/2015-16 27.08.2015

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer**, Hebbal Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (East),** KRIDL, Bangalore.
*NAME OF THE WORK	:	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No.18, BBMP, Bangalore.
REFERENCE	:	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	25.08.2015
DARE OF TESTING	:	27.08.2015

The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	93	80 to 100
2	Softening point, °C	IS :1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	296	Min. 220

*Information is furnished by the Customer/Representative.

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Job No: CTCE/BBMP/W.No.18/KRIDL/BM/AIV/2015-16 27.08.2015

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (East),** KRIDL, Bangalore.
Name of the Work	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No.18, BBMP, Bangalore.
Reference	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
Source / Location	Hormix Plant, Bangalore
Type of Mix	Bituminous Macadam
Date of Testing	27.08.2015

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	388	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	307	302	
4	Aggregate Impact value = percent fines	21.08	22.16	
	$100^* (W_2/W_1)\%$			21.62

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.18/KRIDL/BM/Shape-T/2015-16 : 27.08.2015

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	: **Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
Agency	: **Technical Manager (East),** KRIDL, Bangalore.
Name of Work	: Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No.18, BBMP, Bangalore.
Reference	: AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
Technical Reference	: IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	: Bituminious Macadum
Date of Testing	: 27.08.2015

Flakiness Index = **12.36%**

Elongation Index = **13.52%**

Result : Combined Flakiness & Elongation index **25.88%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

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Job No: CTCE/BBMP/W.No.18/KRIDL/BM/Stripping/2015-16 28.08.2015

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Customer	**Asst. Executive Engineer,** Hebbal Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (East),** KRIDL, Bangalore.
Name of the work	Providing asphalting to SWD Parallel Road to Balance work of BWSSB in Ward No.18, BBMP, Bangalore.
Reference	AEE(Hebbal)/PR/352/2015-16 Dated: 20.08.2015
Type of Mix	Bituminous Macadam
Date of Testing	28.08.2015

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.4	3.30	96.70
2	3.3		
3	3.2		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Macadam is 95%

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